Claims

1. Assembly of two expandable threaded tubular joints, disposed symmetrically and each comprising, on the one hand, a first tubular element (EM) arranged at an end of a tube (T1, T2) and comprising a first portion (P1), provided with a male thread (FM), and a second portion (P2) extending said first portion and comprising i) a first outer surface (SE1), ii) a first annular lip (L1) having a first axial abutment surface (SB1) and a first inner surface (SI1) and delimited by said first outer surface (SE1) over a portion of the axial length thereof, and iii) a second abutment surface (SB2), and, on the other hand, a second tubular element (EF1, EF2) comprising i) a female thread (FF), matching the first male thread (FM) and screwed thereto, ii) a second annular lip (L2), having a third abutment surface (SB3), a second outer surface (SE2), capable of being arranged to face said first inner surface (SI1), and a second inner surface (SI2), and iii) a third inner surface (SI3) and a fourth axial abutment surface (SB4) defining with the second outer surface (SE2) an annular recess (LO) matching and receiving the corresponding first lip (L1), characterised in that said second tubular elements (EF1, EF2) form two opposing ends of a female/female-type connection sleeve (M), separated by a central portion (PCM) initially provided, over an outer surface, with an annular zone (G2) having an initial reduced thickness selected such that the section of the sleeve (M) in the region of this zone (G2) is greater than or equal to the product of the section of a common portion of said tubes (T1, T2), and the efficiency of the joint, in that each second abutment surface (SB2) rests against the corresponding third abutment surface (SB3) and/or in that each abutment surface (SB1) rests against the corresponding fourth abutment surface (SB4) and in that the assembly is capable of developing, after diametral expansion in the plastic deformation region, sealing interference contacts sealing the assembly.

2. Assembly according to claim 1, characterised in that said zone of reduced thickness (G2) is in the form of a dish provided with a central portion having said maximum reduced thickness and lateral walls inclined at an angle of less than approximately 30°.

3. Assembly according to claim 2, characterised in that said angle is equal to approximately 15°.

4. Assembly according to either claim 2 or claim 3, characterised in that said dish (G2) extends substantially in a zone between last threads of the two female threads (FF).

5. Assembly according to claim 4, characterised in that said dish (G2) extends substantially between said third abutment surfaces (SB3) of the two second tubular elements (EF1, EF2).

6. Assembly according to any one of claims 1 to 5, characterised in that said second tubular element (EF) comprises, at a selected location of its third inner surface (SI3), an inner annular groove (G1) arranged substantially in the region of said first outer surface (SE1).

7. Assembly according to claim 6, characterised in that said groove (G1) initially comprises at least two curvilinear portions (C1, C2).

8. Assembly according to claim 9, characterised in that said curvilinear portions (C1, C2) initially have substantially identical radii of curvature.

9. Assembly according to claim 8, characterised in that said radius of curvature is initially between approximately 2 mm and approximately 20 mm.

10. Assembly according to any one of claims 7 to 9, characterised in that the two curvilinear portions (C1, C2) are separated by a substantially cylindrical central portion (PC).

11. Assembly according to any one of claims 7 to 10, characterised in that said groove (G1) initially has a radial depth (H'), the maximum value of which is selected such that the material section at the bottom of the groove (G1) is greater than the product of the smallest section of a common portion of said tubes (T1, T2), and the efficiency of the joint under tension.

12. Assembly according to any one of claims 1 to 11, characterised in that said male (FM) and female (FF) threads initially comprise threads provided with a carrier flank having a negative angle of between approximately $-3°$ and approximately $-15°$.

13. Assembly according to any one of claims 1 to 12, characterised in that said male (FM) and female (FF) threads initially comprise threads provided with a stabbing flank having a positive angle of between approximately $+10°$ and approximately $+30°$.

14. Assembly according to claim 13, characterised in that said male (FM) and female (FF) threads are arranged to have, after screwing and prior to expansion, an axial clearance between their stabbing flanks of between approximately 0.05 mm and approximately 0.3 mm.

15. Assembly according to any one of claims 1 to 14, characterised in that said male (FM) and female (FF) threads are selected from a group consisting of conical-type and cylindrical-type threads and are each formed over at least one tubular element portion (EM, EF).

16. Assembly according to any one of claims 1 to 15, characterised in that said first outer surface (SE1) and third inner surface (SI3) are shaped in such a way that, after expansion, a sealing interference contact is defined between a portion of each of them.

17. Assembly according to any one of claims 1 to 16, characterised in that said first (EM) and second (EF) expandable tubular elements are shaped in such a way that, after said expansion, a sealing interference contact is defined between an inner end portion of said first lip (L1) and said second outer surface (SE2).

18. Method for assembling two expanded tubular joints, characterised in that it consists, based on an initial assembly according to any one of the preceding claims,

– in screwing said first (EM1, EM2) and second (EF1, EF2) expandable tubular elements until each second abutment surface (SB2) rests against the corresponding third abutment surface (SB3) and/or each first abutment surface (SB1) rests against the corresponding fourth abutment surface (SB4), and

– in subjecting said assembly of expandable tubular joints to a diametral expansion in the plastic deformation region so as to develop at least one sealing interference contact between a surface of each second portion (P2) and a corresponding surface of each second tubular element.

19. Method according to claim 18, characterised in that the radial expansion of the joint takes place at an expansion rate at least equal to 10%.